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CHRONIC CERVICITIS

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I AM bringing before you to-night an interim report on some work still in progress. From time to time, when one has a little leisure, it is useful to take a medical shibboleth and examine it. One may then find that many of our accepted views do not stand on a very broad basis of truth. It is because I could not satisfy myself that "cervicitis" was really the condition we were taught in our student days that I and a colleague in Pathology, Dr. L. T. Bond, set out to examine it and for three years we have been cutting sections of the cervix and examining vaginal discharges to find out what cervicitis really is.

I have now my doubts as to whether true cervicitis is anything like as common as we are led to believe. My gynæcological colleagues speak very readily of an infected cervix, but if such cervixes are carefully examined there is very little evidence, in many of them, of any inflammation or the presence of pathogenic organisms. I have come here to-night chiefly to throw out a few provocative questions.

I want first to indicate certain common types of leucorrhœa, which is the usually accepted symptom of cervicitis. I must be very brief and almost synoptic. I have divided the types into three. First there is the type with highly acid vaginal discharge where the pH is 4 to 4.5. The discharge is mucoid, with no pus cells, and there is an enormous number of vaginal epithelial squames. The vaginal acidophilus bacillus is present in great numbers. With this kind of discharge there is usually found, even in virgins with intact hymens, a bright red erosion around the os. The vagina is pale, with pronounced rugæ, and the epithelium is thick, with high glycogen content. The cervix is either normal or else has a very red circumferential erosion, about the size of a sixpence or larger. If the cervix is squeezed with a forceps, sometimes half-a-dram of clear mucus can be squeezed out of it. That condition is non-infective.

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The cervical mucus is bactericidal for some organisms in a few cases, not in all. When we find a very fluid mucus, translucent, and highly refractile, without any cells in it, and alkaline up to pH 8.3, it can often be found bacteriolytic, but the thick jelly-like material of ground glass consistency has not been found bacteriolytic in my experience. Nearly all the fluids in the body, such as tears, for example, are partially bacteriolytic, and it has surprised me that in only a comparatively few cases that I have examined is the cervical mucus of that nature.

The second group of cases are those of low acidity, with a pH of 6 or 6.5. These are purulent, and the *acidophilus bacillus* is not found. There are enormous numbers of Gram-positive cocci. The vagina is red and thin, and the epithelium is lost on the rugæ. The cervix is red, and there may be erosion, but this is not always present. These patients have more of a vaginitis than a cervicitis. Practically always the streptococcus of the *fæcalis* type is in evidence, with a large quantity of pus. If the infected streptococci of the vaginal mucosa are sponged away from the os, and a swab is taken from inside the cervix, which is bathed all round with pus, a sterile cervical canal will often be found. How is it that in such a case, with the streptococcus present, the cervical canal was so frequently found completely sterile? These patients with an acidity of 6–6.5 pH and vaginitis will very often show the trichomonas and the streptococcus, and the streptococcus is commonly in pure culture.

The third group comprises the cases with medium acidity, having a pH of 5–6. Here again, the trichomonas vaginalis is sometimes to be found, always associated with *S. fæcalis*. This organism has a singular capacity for living in an acid medium. There is some inclination to regard the acidity of the vagina as an impregnable defence, but that is not so. In this medium acid type the organisms include a few *Bacilli vaginalis*, many Gram-positive cocci, chiefly of the enterococcus group, and there are few leucocytes and many squames. The cervix may show some erosion or none, and the mucus is often sterile. Only this morning I saw a cervix which has been carefully cultured, the aerobic plates were completely sterile, and on the anaerobic there was a growth of a short-chain non-hæmolytic streptococcus. I have found this also in not a few cases of virginal cervices. The

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work of Colebrook and others has revealed quite a proportion of fatal puerperal septicæmia as being due to an anaerobic streptococcus which is not susceptible to prontosil. It is a very indefinite organism and to attempt to classify it is difficult because the features of each strain are so vague.

The cervical discharge is the main source of leucorrhœa. A certain number of cases of vaginitis will produce a discharge. I have noticed that after total hysterectomy a woman may have a profuse purulent or semi-purulent vaginal discharge to which there is no contribution from the mucus of the cervix, but most cases of leucorrhœa do originate in the cervix. There are two reasons for the cervical excess of mucus; one is inflammatory, which is possibly less general than is thought, and the other is endocrine.

A great deal of the excess discharge of the cervix originates from the œstral stimulus. I am working out the symptomatology and have invented a name which I hope will integrate certain disparate symptoms found in gynæcological work. The word is "œstrosis," and describes a condition of hyper-œstrinisation. One type is that of the young woman, uninfected, with clear, translucent fluid discharge, a highly alkaline, highly refractile cervical mucus, with a pale thick vagina and an acid discharge. This type of woman often has a small erosion. If these are examined microscopically intense activity of the cervical glands is noted, with active vesicular nuclei, cells discharging globules of mucus, and yet there is no infection.

I have been fortunate lately in having four women who were past the menopause and who had to have the uterus or cervix removed for some such condition as prolapse. As far as could be seen, they had normal cervixes. Each of these women received 400,000 units of œstrone, in bi-weekly doses, for three weeks before the operation. That was a large dose of œstrone to give, but it may be comparable with the amount the body receives in normal activity. Presumably, however, in these women, the œstrone activity in the body was low. In these cases the cervical glands were found to be as active as in those of a young woman. The glands were dilated and in many cases cystic. I took the utmost care when examining them under the anæsthetic prior to operation, and I found

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that in these women, aged fifty or sixty, the cervix was pouring out a thin œstral mucus, and when I pinched the cervix with the ring forceps a thick globule came out of the os. Ordinarily, the internal os in women of that age is tight, but the os in these four women was so soft that there was no dilatation necessary up to the size of a lead pencil, and in one case I was able to pass the curette without any dilatation at all. That, again, is an œstral sign. In other words, these people, after the œstrone dose mentioned, were in very similar condition to a normal young woman at the thirteenth or fourteenth day of her month.

In the case of so-called chronic cervicitis we do not often see pus in the cervical canal. We may see odd cells, but much of what passes for pus is the debris of desquamated epithelium. That kind of mucus, too, is nearly always sterile. When we take the non-infected erosions of the virginal cervix, we find there is a zone of quite dense inflammatory exudate running horizontally around it at the level between the squamous and columnar epithelium where the internal os develops. At that point there is a zone of inflammatory exudate, sufficient to diagnose inflammation, and yet, above that, inflammation is not found. In some erosions the inflammation is such as to resemble a true septic ulcer, but in many of the so-called erosions we can find no inflammation except at the squamo-columnar junction.

In non-infected cases, wherever there is a projection of the cervical mucous membrane into the canal, we find that projection filled with inflammatory cells, plasma cells, dilated capillaries, and crowded with polymorphonuclear cells. Yet immediately below the microscopical polypus—which may not be really a polypus—there is no inflammation at all.

It is usually taught that the gonococci which infect the cervix lurk—"lurk" is the word used—in the bases of the cervical glands. In the cervix the glands are branched and deeply set in a matrix of fibrous tissue. But have any of you ever seen a gonococcus in a gland in the cervix? I never have. I have never seen gonococci or bacilli in any gland in a case of cervicitis. Sometimes one does find cells in the cervix, but if one takes trouble to note the cervix at various periods in the monthly cycle one finds that the cervical tissues react to the cycle.

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Just before the monthly period begins, in non-infected cases, a row of polymorpho-leucocytes can sometimes be seen ranged around the glands, and these will pass into the lumen of the gland, but there is no inflammation. There are many points in this pathology on which I should be glad of your views.

Even when we see a frank inflammation in the cervical canal under the superficial epithelium of the canal we almost never find it around the bases of the gland and certainly never around the deep glands. I used to be taught that cervicitis was a cause of metastatic conditions, but I do not think that the non-gonococcal cervix has ever produced a stiff joint. In early days, I had a clinic in Wright's laboratory at St. Mary's, to which came many cases of leucorrhœa, and I made vaccines. We had quite a number of cases of arthritis, and I used to make vaccines sometimes from six or seven microbes, cultivating any organism I could grow, but never could I get any negative phase in the joint; never was there any improvement whatsoever. It is taught that the little cystic follicles in the cervix are infective and a source of toxæmia like the teeth. I have cultivated the mucus in many of these follicles and nearly always it is sterile. Most of these follicles are sterile even in cases of real cervicitis.

I close by asking four questions: (1) Why do non-infected virgins have erosions? (2) Why do erosions disappear at the menopause? (3) Why does "cervicitis" date from non-infective labours, and why should tears mean infection? (4) Why is there so little evidence of inflammation in the glands and none around their fundus?